

THE MEMBRACIDAE AND OTHER HOMOPTERA DESCRIBED  
BY ASA FITCH, 1851, AND EBENEZER EMMONS, 1855:  
HISTORICAL PERSPECTIVE AND ANALYSIS<sup>1</sup>

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*Abstract.*—The historical background to Fitch's and Emmons' publications on Homoptera is discussed. Correct publication dates and authorships of new taxa described in Fitch's Homoptera catalogue and Emmons' report on injurious insects are established using information derived from recently discovered Fitch manuscript notes and correspondence and from obscure government documents. Collecting data and specimen numbers are provided for types of new species of Membracidae described in Emmons' report. Types of Homoptera described in Fitch's catalogue are discussed briefly.

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Since the death of Dr. Asa Fitch in 1879, several papers dealing with his type specimens of Membracidae and other Homoptera have appeared (Sanborn and Lintner, 1879; Goding, 1893; Lintner, 1893; Osborn, 1905; Felt, 1910; Sanders, 1910; Funkhouser, 1915; Woodruff, 1924; McCabe and Johnson, 1980). Inaccuracies in this literature have raised questions about the true dates of publication of the species names, the correct authorship of new species described in Emmons' *Insects of New York*, and the identity of type specimens of Fitch's and Emmons' species. Archival research has helped to resolve this confused situation.

#### HISTORICAL BACKGROUND

On April 15, 1836, the New York State Legislature directed the Governor to employ competent persons to make a geological survey of the State, and to "furnish a full and scientific description of its rocks, soils and minerals, and of its botanical and zoological productions" (Laws of New York, Chapter 142). The reports of this early survey were published in the voluminous series entitled "Natural History of New York." James E. DeKay was placed in charge of the zoological department of the survey, but he chose not to report on the insects (Assembly Document 137, 1855), despite Asa Fitch's desire for that assignment.<sup>2</sup> Ebenezer Emmons was given charge of the agricultural portion of the survey, and with the assistance of Dr. Fitch he reported on the insects of interest to farmers. Dr. Fitch also responded to a request from the Regents of the University of the State of New York that he build a collection of insects for the State Cabinet of Natural History. He authored two catalogues based on specimens in that collection (Fitch, 1849, 1851).

Many interesting details concerning the history of Emmons' report and Fitch's

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<sup>2</sup> Fitch to William S. Robertson, letter dated March 26, 1840; in Fitch's Diary 8, Yale University Library.

work on Homoptera can be gleaned from Fitch's letters to Thaddeus William Harris.<sup>3</sup> Dr. Harris was librarian of Harvard University and an eminent entomologist. Mallis (1971) stated that Fitch and Harris apparently had no dealings with each other, but this series of correspondence attests differently.

"At present I am engaged in preparing some account of our noxious insects for Dr. Emmons' forthcoming volume on the Agricultural Geology of the state, which is to form one of the 'by authority' quartos of the State Natural History. The season for making personal observations was nearly past when Dr. E. first intimated a desire for a paper of this kind; consequently I am obliged to borrow much from books, and particularly from your invaluable 'Report.' I trust, however, that no one on this or any other occasion, will have grounds for accusing me of *borrowing* without giving *due credit*. In this paper I intend describing several new species, mostly of the sub-order Homoptera: —the time allowed for completing the article will scarcely enable me to work out much more than this that is new." [Letter of December 30, 1846.]

"... I will, as I now think revise the Homoptera, and devote next year assiduously to further collecting, studying and describing our species, and have scarcely a doubt, that, with the facilities which you tender me, I can by the close of the year be prepared to present this sub-order in a very accurate and perfect shape." [Letter of June 22, 1848.]

"The Homopterous Hemiptera, which have already been adverted to in our correspondence are again before me. I have been collecting further, and am now preparing a descriptive catalogue of all the species I have been able to find, their synonyms, the plants on which they occur, etc. — which catalogue will be published in the course of the coming winter. Dr. Emmons is also having a number of them very nicely figured for his final volume (*Deo gratias!*) of the State Nat. Hist. series . . . I am quite anxious to work these Homopterous insects out, in the best manner I am capable of doing." [Letter of November 13, 1850.]

"Last evening's mail brought me also the proof-sheets of what I had prepared upon our Homoptera. Those species that I had been able to make out to my satisfaction had been ticketed and placed in the State Cabinet at Albany a few weeks ago — and the paper containing my descriptions of them (28 pages octavo) the printers are now waiting to strike off. In this emergency I have concluded to go down to Albany tomorrow morning, to see if I can get them to delay a day or two, to enable me to compare your specimens with mine and change my names for yours, in those instances where we both have had the same species." [Letter of February 20, 1851.]

"I reached home from Albany last evening, and hasten to inform you of the result of my visit. The printers reluctantly consented to defer their work for one day, to enable me to re-examine the specimens in the State Cabinet and make alterations in my copy . . . Herewith are forwarded copies of my article upon these insects. My final revisal of the proof I perceive was scarcely looked at by the printers; hence there are some typographical errors, but I see none of moment." [Letter of March 1-4, 1851.]

"I have not yet obtained Emmons' 'big book.' Indeed, I dread looking into it, knowing what a hotch-potch thing it must be, and not knowing what use has been

<sup>3</sup> Fitch to Harris, 15 letters dated December 30, 1846, to February 26, 1855; file bMu 998.10.2, Museum of Comparative Zoology, Harvard University.

made of my name in it. Last September, as I was packing up to start next day on a journey, the Dr. unexpectedly dropped in on me, with a bundle of the engravings, for me to *name the figures* therein. The specimens from which the drawings were made he did not think it was necessary to bring, as the figures were 'perfectly accurate' *showing everything* which the specimens showed! On hastily glancing over the plates (for I had not time to examine deliberately) some of the figures I recognized, others I could only guess at, & others still I could form no conception what they were. He also looked over my cabinet and took down some names from thence, although informed they were of no value, some of the families having been ticketed many years ago, when I had scarcely any authorities at hand to aid me in the work. As mineralogy is the Doctor's *spécialité*, and I have some minerals which I should like to have named, I think it will be but fair for me to ask the Dr. to reciprocate the favor he asked of me, and send him 'accurate drawings' of these minerals, that he may name them for me. Like his volume on Fruits, this on Insects, I think, must fall still born from the press." [Letter of February 26, 1855.]

#### FITCH'S HOMOPTERA CATALOGUE

The full title of Fitch's Homoptera catalogue is "Catalogue with References and Descriptions of the Insects Collected and Arranged for the State Cabinet of Natural History," and it appeared in the *Fourth Annual Report of the Regents of the University, on the Condition of the State Cabinet of Natural History, and the Historical and Antiquarian Collections Annexed Thereto, Made to the Senate, January 14, 1851*. That report is also known as Senate Document 30. Fitch dated his introduction to the catalogue February 22, 1851. In his letter of March 1-4, 1851, he informed Harris that he was forwarding copies of his "article upon these insects," and he mentioned the typographical errors that it contained. That article was unmistakably his Homoptera catalogue. Evidently, it was printed and ready for distribution sometime between February 22 and March 1, so February 28, 1851, is the earliest date of publication demonstrated by evidence, in the meaning of the International Code of Zoological Nomenclature, Article 21. J. A. Lintner had the catalogue reprinted, with corrections and notes by E. P. Van Duzee and C. V. Riley, in 1893 in his *Ninth Report on the Injurious and Other Insects of the State of New York for the Year 1892* [From the Forty-sixth Report of the New York State Museum].

#### EMMONS' REPORT

The correct title of Emmons' report is *Insects of New York*, although this title appears only on the first page of text, above the title of the first chapter. The first "title page" reads "Natural History of New York, By Authority," and it is followed by a page that reads "Agriculture of New York: Comprising an account of the Classification, Composition and Distribution of the Soils and Rocks, and of the Climate and Agricultural Productions of the State; Together with Descriptions of the More Common and Injurious Species of Insects, Volume V." The latter page also bears the date 1854, and the Preface is dated July 25, 1854. In New York State Assembly Document 53, dated January 30, 1855, E. W. Leavenworth and T. Romeyn Beck, commissioners appointed to superintend the completion of the publication of the

"Natural History of New York," reported that "... another volume has been completed, viz: the treatise of Dr. Emmons on Insects Injurious to Agriculture. It will probably be ready for general distribution during the month of January." In his letter of February 26, 1855, Fitch told Harris that he had not yet seen Emmons' report, but he seemed to imply that it was available. The publication date, in the meaning of the code, therefore, seems to be January 31, 1855.

#### EMMONS' MEMBRACIDAE

Thirty-five species of Membracidae are described in Emmons' report, two of them simply as named figures. Emmons credited Fitch for providing specimens and names of the genera and species. In his letter of November 13, 1850, Fitch told Harris that he was preparing a descriptive catalogue of all the species of Homoptera he was able to find, and that Emmons was having some of them figured for the "Natural History of New York." It is evident that Fitch presented Emmons with specimens, some of which he had identified and others of which he had recognized as belonging to new species that he named. According to Article 50 of the Code, the author of a species name is the person who first publishes it in a way that satisfies the criteria of availability, "unless it is clear from the contents of the publication that ... some other person is alone responsible both for the name and the conditions that make it available." Because Emmons credited Fitch with the species names, but not the descriptions or illustrations, Emmons must be considered the author of any new species named in his report. Goding's (1893) conclusion that "there is no valid reason for crediting such species to Emmons because the descriptions "were written by Dr. Fitch, as is stated by Emmons" is misleading and supported by false evidence.

Emmons attributed eight of the species described in his report to previous authors. By comparing Fitch's manuscript species notes—most of which were recently found in the New York State Museum—with Emmons' report, it becomes apparent that eleven or twelve more species should have been attributed to previous authors. These include *Thelia lutipes*, which is apparently a misspelling of *latipes* Say. The corresponding figure in Emmons' report is labelled *Enchophyllum latipes*, and in Fitch's notes it is given as *Enchenopa latipes* Say, with the generic names *Enchophyllum* and *Membracis* crossed out. The status of *Gargara inermis* is discussed below. The remaining fifteen or sixteen membracid species names in Emmons' report must be attributed to Emmons. Some of them appear in Fitch's notes, but others do not.

#### FITCH'S SPECIMEN REGISTERS

The types of Emmons' species came from Fitch's personal collection. Fitch never designated a type for any of his species, but he did list individual specimen code numbers in his notes under each species name. The listed specimens that were collected before the publication date of each of his species names must be considered the specimens of his type series. With each code number he gave the collecting locality, date, and frequently other valuable information. The code numbers also correspond with four registers that list the numbers and give the collecting conditions of nearly all of the specimens in his personal collection. In one of the registers, now in the New York State Museum, Fitch wrote:

"All (nearly) of the specimens in my collection have a number upon the pin. Numbers written on white paper with black ink, are all from the State of New York; and are registered in this book; or, those with one or more red-ink lines across the number, are registered in another book similar to this. Specimens from other parts of the U. States, & from Canada are numbered with red ink on white paper, & recorded in a separate book. Specimens numbered with black ink upon colored paper, are from other parts of the world, & are registered in a fourth book."

In another register, Fitch wrote:

"List of Insects with numbers attached crossed with a single red line up to No. 10,000—two red lines, 10,000 to 20,000 . . . These are all taken in the state of New York."

In a third register, also in the possession of the New York State Museum, he wrote:

"List of Insects numbered with red ink. These are all North American, but collected *out of the state of New York*, but in the other United States or Canada or north of there."

In the fourth register, now in the library of the Museum of Science, Boston, Fitch recorded his specimens from places other than the United States or north of there.

It is evident that most of Fitch's specimens, if recognized as such, can be matched with the proper date and locality given in his manuscript notes or registers. It is also evident, as Funkhouser (1915) found, that Fitch's specimens that carry a number in red ink and those that are marked with a red line across the label are not necessarily the true types. The only possible types are those specimens that are listed in Fitch's manuscript notes and registers and that were collected before the species name was published.<sup>4</sup>

#### TYPES OF EMMONS' MEMBRACIDAE

Emmons' membracid species, together with excerpts from the existing notes on type series in Fitch's manuscripts, are listed below. Any number preceded by an asterisk is a specimen number that Fitch crossed with a single red line.

1. *Telamona acclivata* Emmons, 1855:155 [= *Heliria cristata* (Fairmaire)]. 11,782, Stillwater, NY, 16.vii.1846, on oaks.

2. *Cyrtosia arcuata* Emmons, 1855:154 [= *Cyrtolobus arcuatus* (Emmons)].

3. *Gargara cinereum* Emmons, 1855:156 [= *Cyrtolobus cinereus* (Emmons)]. \*4536, Salem, NY, 26.vi.1846, on oaks. 11,760, Stillwater, NY, 16.vi.1846, on oaks. 11,766–777, Stillwater, NY, on plants.

Goding (1893) stated that a specimen numbered 4536 was in the U.S.N.M., but I have been unable to locate it.

4. *Gargara discoidalis* Emmons, 1855:157 [= *Cyrtolobus discoidalis* (Emmons)]. 3038, Salem, NY, 24.vi.1846, on white oak trees, beat from leaves. 4837, Salem, NY, 5.vii.1847, on white oak tree.

<sup>4</sup> Fitch's notes on Psyllidae and Coccidae are in the Smithsonian Institution Archives, those on Aphididae are with the United States National Museum aphid collection in Beltsville, those on Collembola are in the library of the Museum of Science in Boston, and those on all other arthropod groups, constituting the bulk of his manuscript species notes, are in the New York State Museum in Albany.

Goding (1893) stated that specimens numbered 3038 and 4837 were in the U.S.N.M., but I have been unable to locate them.

5. *Cyrtosia fuliginosa* Emmons, 1855:154 [= *Cyrtolobus fuliginosus* (Emmons)]. 11,756, 11,764, Stillwater, NY, 16.vii.1846, on oak in big swamp.

Goding (1893) found specimen number 11,764 in the U.S.N.M., but I have been unable to locate it.

6. *Gargara inermis* Emmons, 1855:157 [= *Cyrtolobus inermis* (Emmons)]. \*2550–\*2555, Salem, NY, 20.v.1846, beat from trees (chiefly chestnut and oak). 1787, 1788, 3047, Tullehassie, AR [presumably Tullahassee, Wagoner Co., OK], July 1851, from Wm. S. Robertson.

Although Fitch's notes indirectly suggest that this name should have been attributed to Fabricius, the species Emmons described and illustrated was apparently new. The name is usually attributed to Emmons (Funkhouser, 1927; Metcalf and Wade, 1966; Kopp and Yonke, 1973).

7. *Cyrtosia intermedia* Emmons, 1855: plate 13, figure 16 [= *Xantholobus intermedius* (Emmons)]. \*4635, Salem, NY, 28.vi.1847, on oaks.

8. *Gargara maculifrontis* Emmons, 1855:156 [= *Cyrtolobus maculifrontis* (Emmons)]. \*3039, Salem, NY, 24.vi.1846, beat from white oaks. 11,762, Stillwater, NY, 16.vii.1846, on oaks in big swamp.

9. *Gargara majus* Emmons, 1855:156 [= *Carynota mera* (Say)].

10. *Gargara nigricephala* Emmons, 1855:157 [= *Atymna castaneae* (Fitch)]. \*3598, Salem, NY, 24.vii.1846, on chestnut. \*5181, Stillwater, NY, 15.vii.1847, beat from chestnut bushes.

11. *Telamona ornata* Emmons, 1855:155 [= *Telamona concava* (Fitch)]. 5419, Stillwater, NY, 1834, a female.

12. *Gargara pallidifrontis* Emmons, 1855: plate 13, figure 7 [= *Cyrtolobus pallidifrontis* (Emmons)]. \*3034, Salem, NY, 24.vi.1846, beat from white oak trees. 11,763, Stillwater, NY, 16.vii.1846, on oaks in the big swamp. \*4897, Salem, NY, 5.vii.1847, on black oak, bank of the kill. \*5107, Stillwater, NY, 15.vii.1847, on oak bushes.

Goding (1893) found specimen number 11,763 in the U.S.N.M., and Dr. James P. Kramer has confirmed its existence (pers. comm.). It is labelled "11,763/*pallidifrontis*/Lectotype, *Cyrtolobus pallidifrontis* (Emmons), L. B. Woodruff."

13. *Gargara pectoralis* Emmons, 1855:157 [= *Stictocephala lutea* (Walker)].

14. *Gargara pubescens* Emmons, 1855:157 [= *Ophiderma pubescens* (Emmons)].

15. *Telamona turriculata* Emmons, 1855:155 [= *Glossonotus turriculatus* (Emmons)].

16. *Smilia viridis* Emmons, 1855:154 [= *Cyrtolobus viridis* (Emmons)]. 11,767, Stillwater, NY, 16.vii.1846, on plants. \*5178–79, Stillwater, NY, 15.vii.1847, on walnut bushes. \*5364, Salem, NY, 23.vii.1847, on white oak.

#### FITCH'S HOMOPTERA

The Homoptera collection that Fitch described in his 1851 catalogue is in the New York State Museum, successor to the State Cabinet of Natural History. The specimens in it were taken from his personal collection and renumbered. Fitch enumerated consecutively all specimens in his two catalogues and in the State Cabinet. Specimens referred to in his 1849 catalogue were numbered 1–608, and those in his 1851

catalogue were numbered 609–874. These numbers bear no relation to Fitch's species notes or specimen registers.

In the Homoptera catalogue, Fitch described 6 new genera, 85 new species, and 5 new subspecies, including 3 genera, 15 species, and 2 subspecies of Membracidae. The State Museum's collection still contains original specimens of 60 of the species and subspecies. The specimens of Psyllidae, many of the Aphididae, and a few specimens from other families were destroyed by museum pests (Lintner, 1893). The remaining specimens, as well as specimens from Fitch's personal collection that were collected prior to February 28, 1851, must be considered types. Fitch's notes indicate that for most species he had more than one specimen prior to the publication of his catalogue. In these cases, a lectotype should be designated if that has not already been done. Funkhouser (1915) designated specimens from the State Museum collection as lectotypes for Fitch's species and subspecies of Membracidae that were described in his catalogue. Specimens of Homoptera from Fitch's personal collection are in the U.S.N.M. and in the T. W. Harris Collection, Museum of Comparative Zoology, Harvard University.

A catalogue to the taxa and known existing specimens described by Fitch, a bibliography of his entomological papers, and a biography of Fitch are in preparation.

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